

Chapter 7

Periodic Properties of the Elements

1- Which one of the following has the smallest atomic radius?

A. Cl

B. S

C. Se

D. Br

2- Rank the three iodine species in order of increasing size.



3- Choose the answer that lists the species in order from largest to smallest size.

A. Cl, Al, Na

B. S^{2-} , O^{2-}

C. Na^+ , Rb^+

D. Li, K, Cs

4- Which of the following pairs has the atom with the larger atomic radius listed first?

A. Cl, Si

B. N, As

C. O, Si

D. Ga, P

5- Which one of the following ions is largest?

A. I^-

B. F^-

C. Br^-

D. Cl^-

6- Place the following elements in order of increasing ionic radius: Na^+ , Mg^{2+} , F^-



*7- Arrange these elements in order of decreasing atomic radius:
Sb, Se, Pb*

A. $\text{Se} > \text{Sb} > \text{Pb}$

B. $\text{Pb} > \text{Sb} > \text{Se}$

C. $\text{Sb} > \text{Pb} > \text{Se}$

D. $\text{Pb} > \text{Se} > \text{Sb}$

8- Which one of the following has elements listed in order of increasing first ionization energy?

A. Cl, S, O

B. K, Rb, Cs

C. F, O, N

D. Si, P, O

9- Which one of the following elements has the smallest first ionization energy?

A. K

B. Cl

C. Be

D. Na

10- Place the following in order of increasing first ionization energy: N, As, F

A. $N < As < F$

B. $As < N < F$

C. $F < N < As$

D. $As < F < N$

11- Which one of the following elements is most likely to have the following ionization energies (in kJ/mol)?

*1st = 738.1 2nd = 1450 3rd = 7730
4th = 10500 5th = 13600 6th = 18000*

A. magnesium

B. potassium

C. neon

D. selenium

12- Which one of the following elements has the lowest electron affinity?

A. bromine

B. carbon

C. sulfur

D. sodium

13- Which of the following elements has the most exothermic electron affinity?

A. B

B. C

C. N

D. F

14- For which one of the following atoms is the addition of an electron the most energetically favorable?

A. Li

B. Al

C. K

D. O

15- As you move from left to right on the periodic table, what generally happens to the metallic character of elements?

- A. Increases
- B. Decreases
- C. Remains constant
- D. Decreases then increases

16- Which has more metallic character?

A. Pb

B. Cl

C. Sn

D. O

*17- Place the following in order of decreasing metallic character:
C, O, N, F*

A. $O > N > F > C$

B. $F > O > N > C$

C. $C > N > O > F$

D. $F > N > O > C$